HVAC SPECIFICATIONS

REQ...
All ma... fine... this... me... "Te...

1. Th... this...
2. It is ... Specifications to call for finished work, tested and ready for ope... materials shall be new and of first-quality.
3. All ... and ... Code.
4. The ... Drawings are generally diagrammatic and are intended to convey the scope of work and indicate ... movement of ductwork, grilles, and induction units. Existing ducts, pipes, utilities, etc. that are ... during the construction period, whether or not due to the Contractor's negligence, shall be repaired ... by the Contractor and left in a condition satisfactory to the Engineer.
5. Co... locations of all diffusers with architectural reflected ceiling plans.
6. Th... and pipes, ducts, etc. penetrating rated walls, shall not exceed 1/2" and shall be packed solid ... Mineral Wool or equivalent non combustible material. Perimeter shall be closed off by tight ... escheons on both sides of this construction as required by Sections C26-504.5 (b) of N.Y.C. Bu...

MATE... BE RETURNED TO THE AUTHORITY
1. The ... shall deliver all excess material as shown below to a designated area in the W.T.C. complex as dir... Freight...
a. ... + (1) 1 1/2 capacity

MATE... OBTAINED FROM THE AUTHORITY
1. The ... shall purchase the following materials from the Authority as required for the installation a. ... (1) full capacity

DUCT...
1. All d... work shall be furnished, installed and fabricated in accordance with the latest edition of the SMACNA Low ... High Velocity Duct Construction Standards Manual, using prime sheets of galvanized steel. All square ... shall be provided with turning vanes on maximum 4" centers. Provide access doors at all fire and ...
2. A... volume controllers.
3. A... ...all be ... diameter unless otherwise indicated on drawing.
4. S... ...ed to structural steel above at intervals not exceeding 6'0". C... required.
5. F... and the diffuser plenum of ceiling pouches shall be sealed with 3M Co. ... Class ... Type 52 clamps.
6. ... SMACNA ... standards.

ACO... ...DUCT SURFACES
1. A... ...interior surface of the ductwork from the discharge connection of the Acou... ...of 10 feet
2. M...
3. O... ...ver board.
   b) In... ...have a composite fire and smoke hazard rating as tested by procedure ... not exceeding a "Flame Spread" of 25 and a "Smoke Developed" of 50. ...proved equal.
   c) In... ...bs per cubic foot with a thermal conductivity of K=0.26 BTU/in/sq ft/deg F...
   d) T... ...less than 0.70 based on No. 6 mounting. (Test Method C423) and suitable fo...
4. In...
   a) A... ...with 100% coverage and approved adhesive.
   b) T... ...face the air stream. All joints shall be snug and ready butted.
   c) Al... ...be heavily coated with approved adhesive. A metal nosing shall be installed ...
   d) C... ...sizes over 16" in height, additional mechanical fasteners on a maximum of ... the duct liner to the duct. Fasteners shall be installed within 3" of the leading ... mechanical fasteners shall be flush with liner surface.

VIBR...
1. S... ...vibration, providing all required wall brackets supporting legs and leveling d... ...all be subject to the approval of the Engineer and be similar to the method ...
2. T... ...and performance as shown on the contract drawings.
3. T... ...nits shall be made with "Thermoflex" Type S-TL as manufactured by ... ...ial of sizes shown, but not less than the full unit inlet size. The ...sota Mining & Mfg. Co. 800 sealant and clamped with Ideal Type 52 ... connections that penetrate any rated closures shall be installed as ...
4. C... ...duction units by means of wire brushing or steam cleaning finned ... plenum chamber, cleaning nozzles and replacing filters. All ...ionly checked for proper operation and recalibrated where required,
5. The balancing of induction units shall be included in the overall balancing and testing procedures as specified under the heading 'BALANCING'.

PIPING
All pipe ... connecting to the induction unit shall be Copper ASTM B-88, soft (annealed) Type L and fittings shall be standard weight copper and solder type. All soldered joints shall be made with 95-5 Tin Antimony Solder having a melting point greater than 450 Deg. F. All soldered joints shall be thoroughly cleaned before the application of the solder. All insulation shall match existing.

FIRE DAMPERS
Fire damper... are based on Air Balance, Model #119 Type AL. They shall be installed in accordance with the manufacturer's approved installation instructions and shall be N.Y.C. Board of Standards and Appeals (B.S.A.), Underwriters Laboratories (U.L.) approved and labeled.

VIBRATION ELIMINATORS
Vibration ... layers shall be as manufactured by Mason Industries, Vibration Mounting and controls Inc. or an approved equal

AC-UNIT SUPPORTING REQUIREMENTS
1. All supporting steel shall conform to ASTM Designation A-36.
2. All nuts must have lock washers.
3. Contractor shall field measure and verify existing conditions.

CEILING GRILLES AND DIFFUSERS
Model numbers specified are manufactured by Anemostat or an approved equal. All finishes shall be baked white enamel

1. Diffusers (Supply)	shall be Model DF with No. 41 core pattern (4-way)
2. Grilles (Return)	shall be Model S3HD
3. Damper	Damper for diffusers shall be Model DOB.

WATER COOLED AIR CONDITIONING UNITS
1. Furnish and install packaged air conditioning units. Unit shall be complete with temperature control, compressor, evaporator coil, condenser water regulating valve and other system components required to p... proper air conditioning for the space designated on the Contract Drawings. Filter shall be Class I, UL ... efficiency.
2. A... be furnished with the following accessories:
   a) ...ate Pump
   b) ...t Switch
   c) ...ted Control Box thermostat
3. S...

Unit No.	P.	Ext. S.P.	Auxiliary Cooling Cap. (Btu) 80 DB. 67 WB.	Total Cooling Water GPM 85 Deg. F.E.W.T.	Make	Model No.	Total WMNEN
AC		5	119000	31.9 Gpm	ClimateMaster	V120	735 lbs.

For AC Unit motor shall be 3 phase and for 460 volts.

4. The Unit shall be factory run, tested and rated in accordance with ARI Standards.
5. AC Unit shall be complete with water regulating valve. Valve shall be Metric WCCW type or an approved equal. It shall be a positive shut-off type and shall be rated for 150 psi. working pressure.
6. Unit shall be climator or equal to make and model listed and rated at 150 lbs. working pressure.
7. Vibration isolators shall be as manufactured by Vibration Mountings Control Inc. or an approved equal.

PIPING AND ACCESSORIES
A. TEST REQUIREMENTS (Aux. Cooling Water)

Operating Pressure	150 PSIG
Operating Temperature	85 Deg. F - 95 Deg. F
Hydrostatic Test Pressure	1.5 x Operating Pressure
Duration of Test	2 hours

Isolate equipment, controls, instruments and valves from the piping system during hydrostatic tests

B. Piping & Fittings

System	Pipe	Fittings
Aux. Cooling Water	Black Steel Pipe, Conforming to ASTM A-53 Schedule #40 Grade B, Black Seamless	2-1/2" cast iron screwed 250 lb. class
A.C. Unit	Copper ASTM B-88	Wrought Copper Solder
Condensate Drain	Hard Temper Type (L) ASTMB-88	Joint 5 ANSI B16.18

Vent auxiliary cooling water piping at all high points.

C. Accessories
1. Unions for auxiliary cooling water service shall be similar and equal to 250 lb. class, malleable iron with bronze seats, Grinnell Figure 554, U.L.
2. Nipples 6" length or less, shall be extra heavy and the material shall be the same as the pipe. Close nipples shall not be used.
3. Braided type flexible connector shall be Vibration Mounting and Control Inc., (VICO) Model MFP Style NE Max. 280 psig or approved equal.

D. Soldered Joints
95-5 Tin-Antimony Solder having a melting point greater than 450 F. Excess solder shall be removed while still in the molten state with a fillet left at the face of the fitting.

E. Thermometers
1. Thermometers for piping shall be of the "all angle" (universal), separate socket, industrial type with #304 stainless steel extension neck wells.
2. The thermometer for auxiliary cooling shall operate at 0 - 160 Deg. F range and shall include a sufficient safety margin at either ...
3. Thermometers ... be as manufactured by Albert A. Weiss, Weksler Instrument Co., Ashcroft or approved equal.

F. Pressure Gauge
1. Pressure gauges shall be of the bourdon tube spring type with 4-1/2" dial sizes. Gauges shall have black aluminum cases with black numbers on white background. The gauges shall be as manufactured by Albert A. Weiss, Weksler Instrument Co. Ashcroft or approved equal.
2. The pressure range ... the auxiliary cooling, shall be 0 -150 psi. and the Bourdon tube shall be Bronze.

G. Strainers.
Strainers shall be similar and equal to those manufactured by Muller Steam Specialty Co. Screwed "Y" strainers for pipes 2-1/2" and smaller shall be 250 lb. No.11 The screens for the strainers shall be stainless steel. Strainers shall be provided with capped blowdown valves.

H. Cutting and Patching, Sleeves and Escutcheons
1. Pipe ... sing through walls shall have a trim opening cut no greater than necessary for the installation of a sleeve secured therein. Sleeves shall be 1/2" in diameter larger the outside diameter of the pipe or required insulation passing through, and of sufficient length to be flush with the finished wall surfaces. Sleeves shall be made of Schedule 40 galvanized steel pipe for concrete block partitions and 20 gauge sheet metal for framed partitions
2. Pipe passing through floor slabs shall have an opening core drilled 1/2" in diameter larger than the outside diameter of the pipe or required insulation passing through.
3. Annular spaces between piping and sleeves or core drilled floor openings shall be packed with thermafiber and sealed to retain the fire integrity of the walls and floors with a non-hardening compound similar and equal to Duxseal as manufactured by J. M. Clipper Co.
4. All piping passing through walls, floors or ceilings shall be fitted with chromium plated cast brass escutcheons with fastening set screws similar and equal to Fee & Mason Manufacturing Co., F & S Manufacturing Co. or Ritter Pattern and Casting Co.

I. Pipe Supports and Hangers
1. All supports and parts shall conform to the latest requirements of the ANSI Code for pressure piping B31.10 and MSS standard practice SP-58.
2. Hangers shall be manufactured by Grinnell Co., Central Iron, Fee and Mason, Blawknox Co. or an approved equal
3. Pipe hangers, rods, inserts and clamps shall be those approved for their respective uses by the Underwriters' Laboratories, Inc
4. Unless otherwise specifically approved, hanger size and spacing shall be:

	Pipe Sizes	Max Hanger Spacing	Minimum Rod Sizes
Steel	1/2" to 1"	7 ft. o.c.	3/8"
	1 1/4" to 2"	9 ft. o.c.	1/2"
	2-1/2" to 4"	10 ft. o.c.	1/2"
	5"	12 ft. o.c	5/8"
	6"	12 ft o.c.	3/4"
	8" to 12"	12 ft o.c.	7/8"
copper	1/2" to 1-1/4"	6 ft. o.c.	3/8"
	1-1/2" to 2"	8 ft. o.c.	3/8"
	2-1/2" to 3-1/2"	10 ft. o.c.	5/8"

The above hanger spacings apply to straight runs of piping only. At points where there are valve specialities or branch connections additional hangers or supports shall be used to properly support the load.

J. Valves

1. Type	Size	Jenkins Pressure	Crane Fig. No.	Stockham Fig. No.	Fig. No.
Gate	Up to 2"	125 psi.	47U	428-UB	B-105
Gate	Up to 2"	150 psi.	49U	431	B-128
Gate	Up to 2	300 psi.	280U	634E	B-144
Ball	Up to 3"	300 psi	32A	930-TF	S217-BR-R-T
Plug	4" & Up	300 psi			WA73 OR

2. Balancing valves shall be non-lubricating ecentric plug (ballcentric) type with adjustable stop valve shall be rated for 175 lb.W.O.G. or 400 lb. W.O.G. Valves shall be as manufactured by DeZurik or approved equal.
3. Domestic Water
   (a) Gate Valves - Fairbanks Fig. 0250-FB
   (b) Check Valves - Fairbanks Fig. 0640-FB
   (c) Pressure Reducing Valves - J.R. Gunzenhauser, Model # 1130H
   (d) Vacuum Breaker - Watts Regulator Co. Mod. No. 288A.C.

K. Pipe and Valve Identification
1. Provide and affix a set of approved adhesive bands identifying the system and direction of flow.
2. Each set shall consist of one band on which the name of the service is printed in letters not less than 1 inch high.
3. Bands shall be in colors as indicated below and shall conform to ANSI Standard A-13.1.

System	Background	Letters and Arrow
Auxiliary Cooled Water	Green	Black

Adhesive bands shall be W.H. Brady Company, Seton Corp. or an approved equal.

4. Place a durable metal or plexiglas tags permanently affixed to condenser water shut off valves indicating the tenant name, floor served, and "SUPPLY" or "RETURN". Tag shall be 3" x 6" size with black lettering on a green background.

L. Threaded Joints
Steel pipe threaded joints shall be made tight using only an approved pipe joint compound or tape, placed on the male thread only.

CONDENSATE PUMPS
1. Shall be as manufactured by Little Giant Company, model # VCL-24-UL(S), 270 Gallons per hour at 1' head, 120V, 1ø or approved equal.
2. AC unit(s) shall be electrically interlocked with their condensate pump so that if the condensate pump is not operating the AC unit shall be locked out, or the AC unit shall shutdown on a high water condition in the condensate drain pan. Contractor shall submit a wiring diagram for all AC equipment showing all control devices including all shutdown functions.

INSULATION FOR CONDENSATE WATER
Insulation: 1/2" thick one piece fiberglass. Flame spread rating not greater than 25", smoke rating "50". (Insulate fittings.)

AUXILIARY DRAIN PAN REQUIREMENTS
1. Make drain pan 12" Larger than AC units on all four sides with upstanding sides 1 1/2" with 1/2" hem turned down outside of pan. Pans shall be made from 16 ga. galvanized steel with soldered corners made water tight.
2. Install water sensor in drain pan along with necessary controls to sound local alarm and shutdown AC unit when activated by water in the pan.
3. Water alarms shall be "Water Alert" Made By Dorlen, sensor unit model #SS-R (T), remote indicator unit model no. ..., power supply unit model PS-3 or approved equal. Locate alarms so that they can be easily heard in the occupied area.
4. Place a ... plate metal sign permanently affixed to alarm identifying AC unit and to read "When Alarm sounds call 435-4164 weekdays and weekends".

REMOVALS
All unused piping, ductwork, hangers, supports, shall be completely removed all the way back to the core riser closet, or back to the nearest branch main and capped, sealed watertight or airtight. All the openings shall be properly patched, sealed, and fire stopped to maintain the original integrity of the partition's fire rating

EXECUTION
1. All work in occupied tenant areas shall be performed on other than normal working hours as directed by the Engineer.
2. The Contractor shall notify the Engineer when shut-down of existing systems becomes necessary. Shut-down time shall be kept to a minimum.

SHUTDOWNS
Request for shutdowns of main condenser water lines must be delivered to the Manager, WTC Operations, at least thirty (30) working days prior to the requested shutdowns and shall be subject to the final approval of the Manager, WTC Operations.

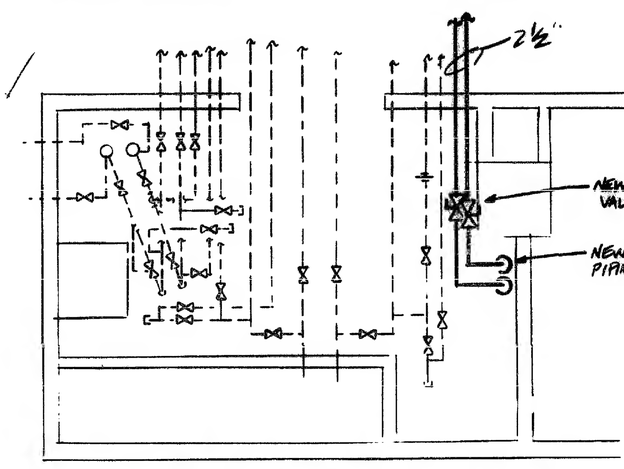
BALANCING
The Contractor shall provide the service of an air balancing and hydronic testing specialist who specializes in Heating, Ventilation and Air Conditioning systems. Perform all balancing in accordance with sheet metal and air conditioning Contractors National Association (SMACNA). Testing shall be performed in the presence of a WTC Construction Inspector. Upon completion and testing of the HVAC System, three (3) copies of the Balancing Report must be submitted to the WTC Construction Supervising Engineer and one (1) copy to the WTC Planning Coordinator.

SUBMITTALS
Submit for approval three (3) sets of shop drawings of ductwork, piping and details of fire damper installation. Submit three (3) sets of catalog cuts for fire dampers, A.C Unit, ceiling grilles, ceiling diffusers, valves, accessories and three (3) copies of air balancing data report.

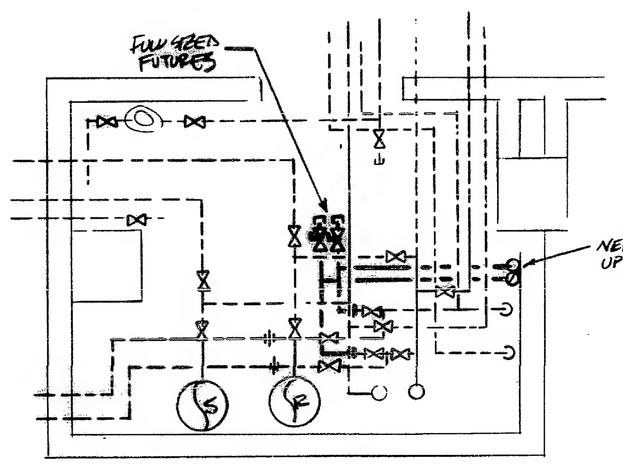
APPLICABLE STANDARDS, CODES AND REGULATIONS
This entire installation shall be manufactured, tested and installed to conform, as a minimum, to provisions of the following codes and standards except where stricter requirements are specified elsewhere herein or shown on the contract drawings.
A. National and New York Electrical Code
B. National Fire Protection Association (N.F.P.A.)
C. New York City Building Code
D. Underwriters Laboratories, Inc. (U.L.)
E. American National Standards Institute Inc. (A.N.S.I.)

CONTROLLED INSPECTION
a. The ventilation system shall not be placed in operation until it has been tested and inspected in accordance with the requirements of the New York City Building Code, section C26-1301.2.
b. The controlled inspection shall be made and witnessed by a licensed professional engineer, employed by the contractor, who shall be approved by the Engineer-of-Record, as part of the work of the sub-contract.

ESTIMATED SUPPLEMENTAL COOLING LOAD
The estimated supplemental cooling load for this Tenant Alteration Application is 10.6 tons have been added in the new construction and 1.5 tons have been removed in the demolition.



CONDESER WATER CLOSET
105 TH FLOOR
½ = 1'-0"



CONDENSER WATER CLOSET
104TH FLOOR
½" = 1'-0"